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The smaller doses of thymol were generally given on two consecutive days, the larger ones on one day only. A preliminary purge is given on the preceding day. The oil mixture has generally been tried first and subsequent treatments have alternated between oil and thymol.

The statement here given contains all the strictly scientific data to be obtained on this subject. While the number of cases is small the territory covered is of considerable extent, and the conditions of life and customs prevailing being the same throughout southern China it is highly probable that if the inhabitants of Swatow, Canton, Hongkong, and the vicinity be infected with hookworm the infection is general in southern China.

ANTIMENINGITIS VACCINATION.

A note by WADE H. FROST, Passed Assistant Surgeon, United States Public Health Service.

Inoculation with killed cultures of the meningococcus has recently been advocated as a prophylactic for cerebrospinal meningitis, especially by Sophian.[1] He has used for this purpose cultures grown in glucose agar, killed by heating to 50° C. for one hour. He advocates three injections of 500 million, 1,000 million, and 1,000 million, respectively, at intervals of seven days.

As to the efficacy of this vaccination, Sophian and Black (loc. cit.) have shown by agglutination and complement-fixation tests that in man the vaccination causes the development of specific antibodies similar to those developed in the course of an attack of cerebrospinal meningitis, and presumably indicating a certain degree of immunity. They state that several hundred persons were vaccinated in Kansas City during the epidemic there in 1911, none of whom subsequently developed the disease. In the absence of comparative statistics this statement alone does not justify any conclusion as to the prophylactic value of the procedure. They also state that about 100 persons were vaccinated in Dallas, Tex., during an epidemic of meningitis in 1911. Two of these, nurses, each of whom had received two inoculations, developed cerebrospinal meningitis some weeks later. Both recovered.

On the whole their statements furnish no evidence of the prophylactic value of this vaccination, while they do indicate, by the instances cited above, that it does not afford absolute protection against infection.

At present an opinion as to the value of this vaccination can be based only on indirect evidence, viz, the development of antibodies in the blood of vaccinated persons, and by analogy, the efficacy of similar inoculations in the prevention of typhoid fever and bubonic plague.

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[1] Sophian, A., and Black, J.: Prophylactic vaccination against meningitis, Journal American Medical Association, 1912, vol. 59, p. 527.

Statistical evidence of the value of any prophylactic against cerebrospinal meningitis is extremely difficult to obtain, because of the epidemiological peculiarities of this disease. It does not show a constant tendency to spread. In one community it may become epidemic, while when introduced into another contiguous community at the same time under circumstances to all appearances equally favorable for the development of an epidemic, the infection may die out after causing only a few cases. Again, even in epidemics, the proportion of the population attacked is relatively small (from 0.1 to 1 per cent); and in this, as in other respects, epidemics in different localities vary widely without discoverable cause. Since it is impossible, in any given community, to foretell the extent to which cerebrospinal meningitis will spread when introduced, it is equally impossible to estimate the efficacy of such preventive measures as may have been carried out. Only very extensive and very careful statistics could prove the prophylactic value of vaccination or any other measure of prevention.

The objections which may be brought forward against antimeningitis vaccination are the danger of using an incompletely sterilized culture; the possibility of inducing a temporary state of increased susceptibility ("negative phase"); the discomfort due to the local and general reaction to inoculation, and the labor and expense involved.

The first-mentioned danger is probably negligible. The danger of inducing a negative phase of immunity is an unknown quantity. It has not been proven to be a real danger in antityphoid and antiplague vaccinations, and need not, for the present, be considered as a valid objection to antimeningitis vaccination. Such danger as may exist would in all probability be reduced by the simultaneous injection of antimeningitis serum.

According to Sophian and Black, a local reaction, more or less painful, is common. There may be no general constitutional reaction, but frequently there are mild symptoms, headache, malaise, and fever, lasting for 24 hours. More severe symptoms are said to have been noted, but to be unusual.

Even granting the efficiency of antimeningitis vaccination as a prophylactic, the labor and expense would be very great in proportion to the results attained. In dealing with an epidemic of smallpox, for example, a disease which, when epidemic, may be expected to attack a very large proportion of those exposed who are unvaccinated, the results attained by wholesale vaccination are relatively great. One may count on preventing by this means from 25 to 50 cases of smallpox in every 100 exposed persons not previously vaccinated.

In vaccination against a disease such as meningitis, which is by nature of rare occurrence, one may count on the prevention at most of only one to ten cases in each thousand persons vaccinated. It is evident that unless the vaccination is done on a very extensive scale it offers but little chance of materially reducing the prevalence of the disease. Notwithstanding its possible dangers, and the lack of proof that it is efficient, antimeningitis vaccination deserves full consideration as a prophylactic measure, because of the inefficiency of other preventive measures and the terrible consequences of the disease.

It would seem wise at present to approve the vaccination of all who may desire it, in communities where the disease is epidemic, or where an epidemic seems likely to occur, especially of physicians and nurses who are likely to come into intimate contact with cases. The question will often arise whether persons already intimately exposed to cerebrospinal meningitis should be vaccinated and whether there is more chance of protection or of inducing a phase of increased susceptibility. There is ample ground for an honest difference of opinion on the subject; but the burden of proof is apparently on those who assert that there is danger from the "negative phase."

It does not appear advisable at present to attempt to make antimeningitis vaccination compulsory, nor to divert to wholesale vaccination large sums of money, which might otherwise be applied, perhaps with more certainty of results, to the early diagnosis, serum treatment, and hospital care of developed cases.

Wherever antimeningitis vaccination is employed it should be done as an experiment. Careful records should be obtained of each person vaccinated and of the incidence of meningitis among the vaccinated and the unvaccinated population of each community.

DERATIZATION OF RAT-PROOF BUILDINGS.

A note by W. C. Rucker, Assistant Surgeon General, United States Public Health Service.

It not infrequently happens that in rat-proofing buildings rodents are imprisoned. Sometimes buildings which are rat proof in the ordinary sense of the term may become rat infested by the introduction of rodents in freight. In both situations the rodents are protected from their natural enemies, and if the food is sufficient their numbers may increase greatly. In granaries, storehouses, and abattoirs it is frequently very difficult to eradicate them by the ordinary means. The animals soon become trap shy, and while a considerable number may be captured in barrel traps it frequently seems impossible to effect a complete deratization in such a situation.